

WMA Blue Ribbon Panel

Technical Presentation on Potential
Effectiveness of WMA Policies

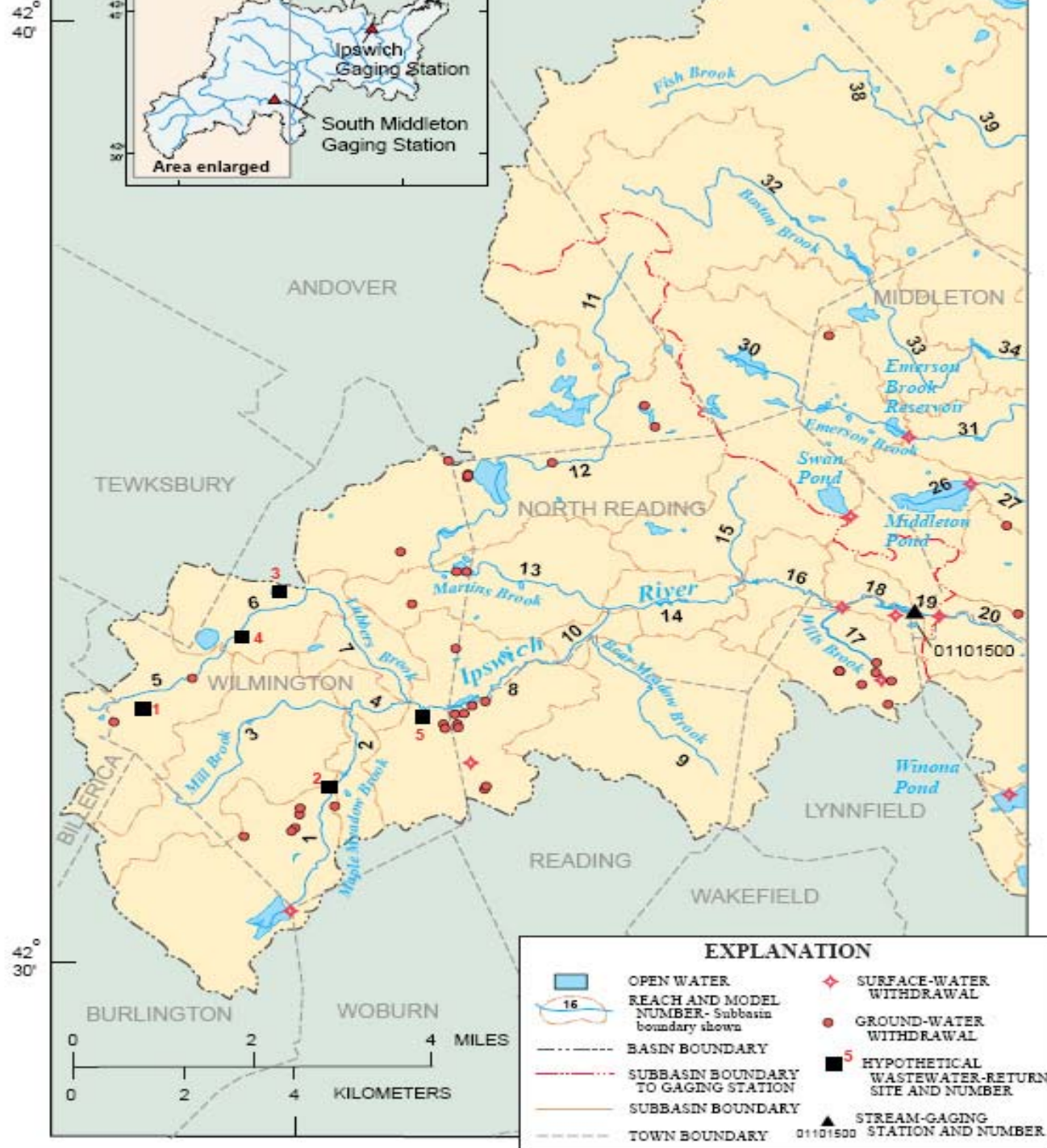
Mass. Water Works Association
October 6, 2006

Technical Issues for Discussion

1) Will the WMA Policies Be Effective?

Technical Issues for Discussion

- 1) Will the WMA Policies Be Effective?
- 2) Indications That the WMA Policies Will Not Be Effective



A Precipitation-Runoff Model for Analysis of the Effects of Water Withdrawals on Streamflow, Ipswich River Basin, Massachusetts

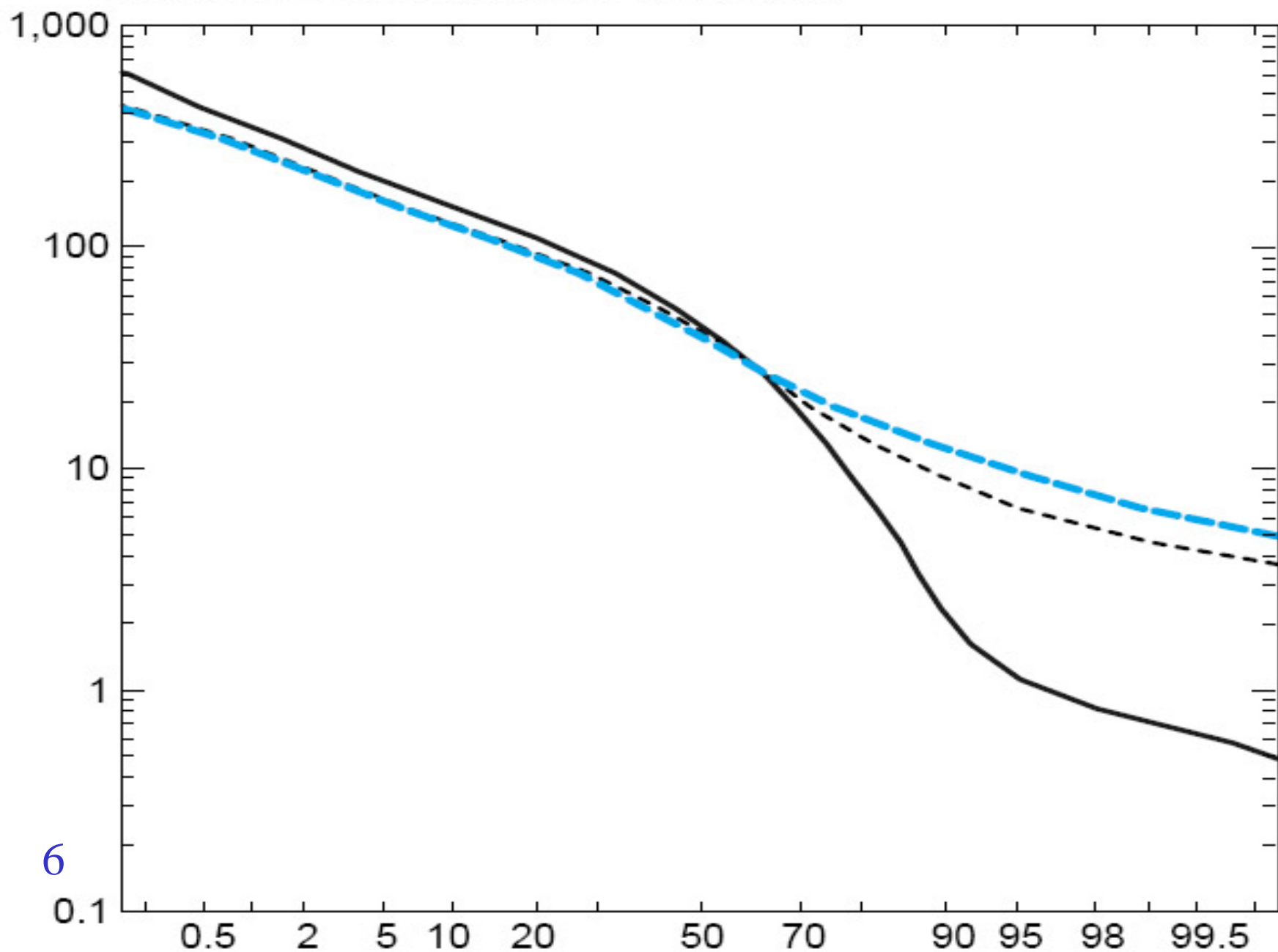
Water-Resources Investigation Report 00-4029

Prepared in cooperation with the
MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL MANAGEMENT, and the
MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION



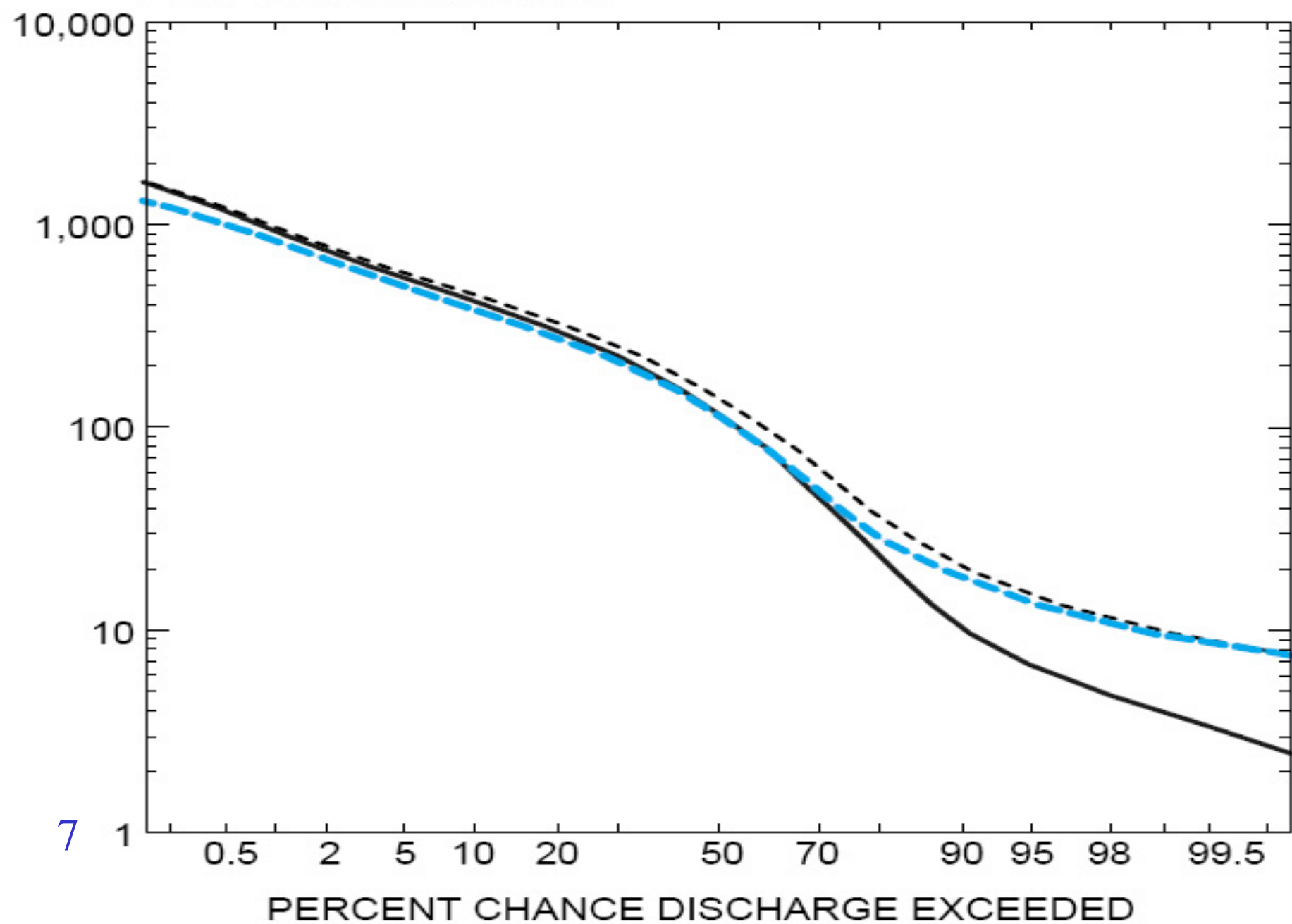
U.S. Department of Interior
U.S. Geological Survey

A. SOUTH MIDDLETON STATION

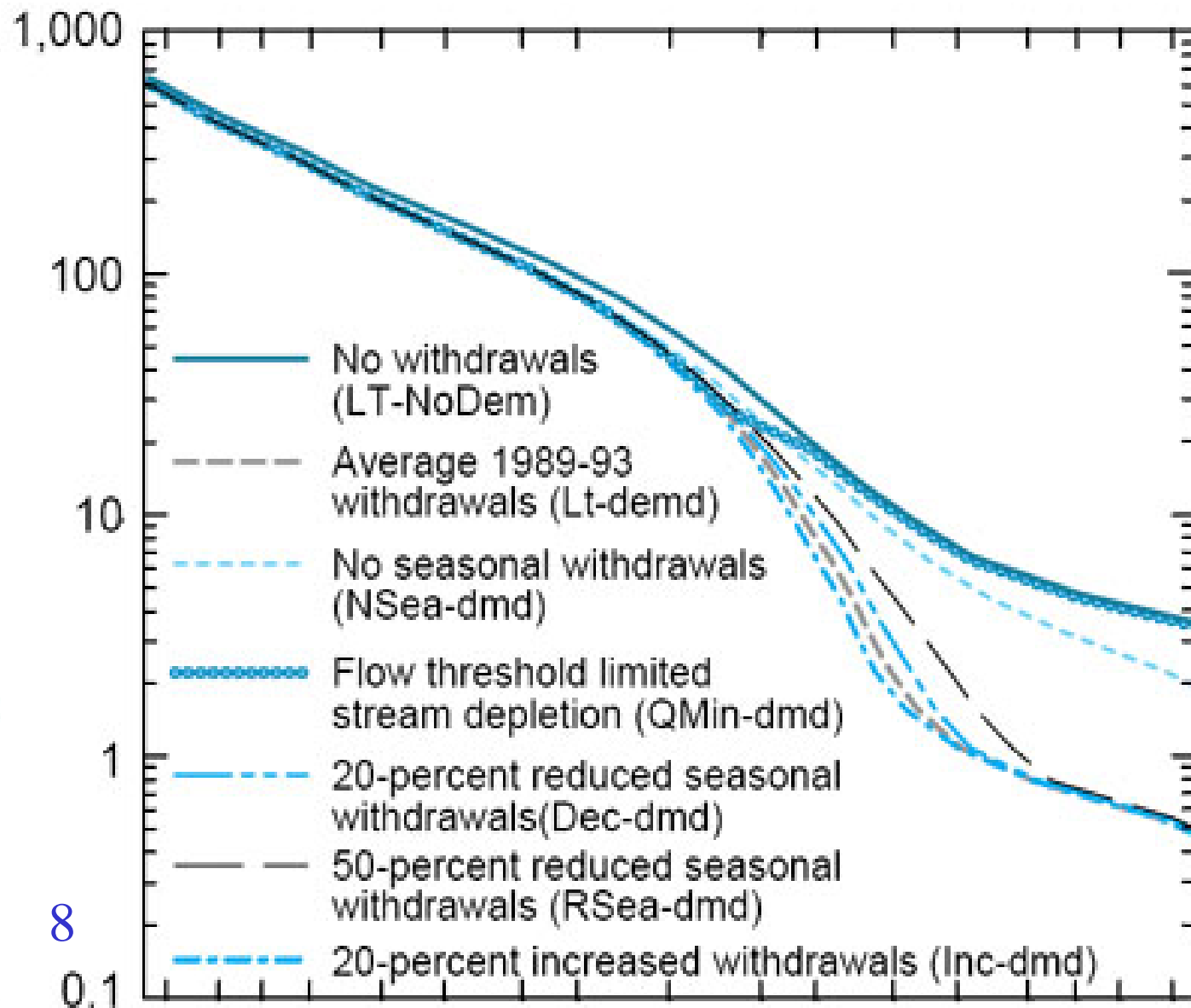


B. IPSWICH STATION

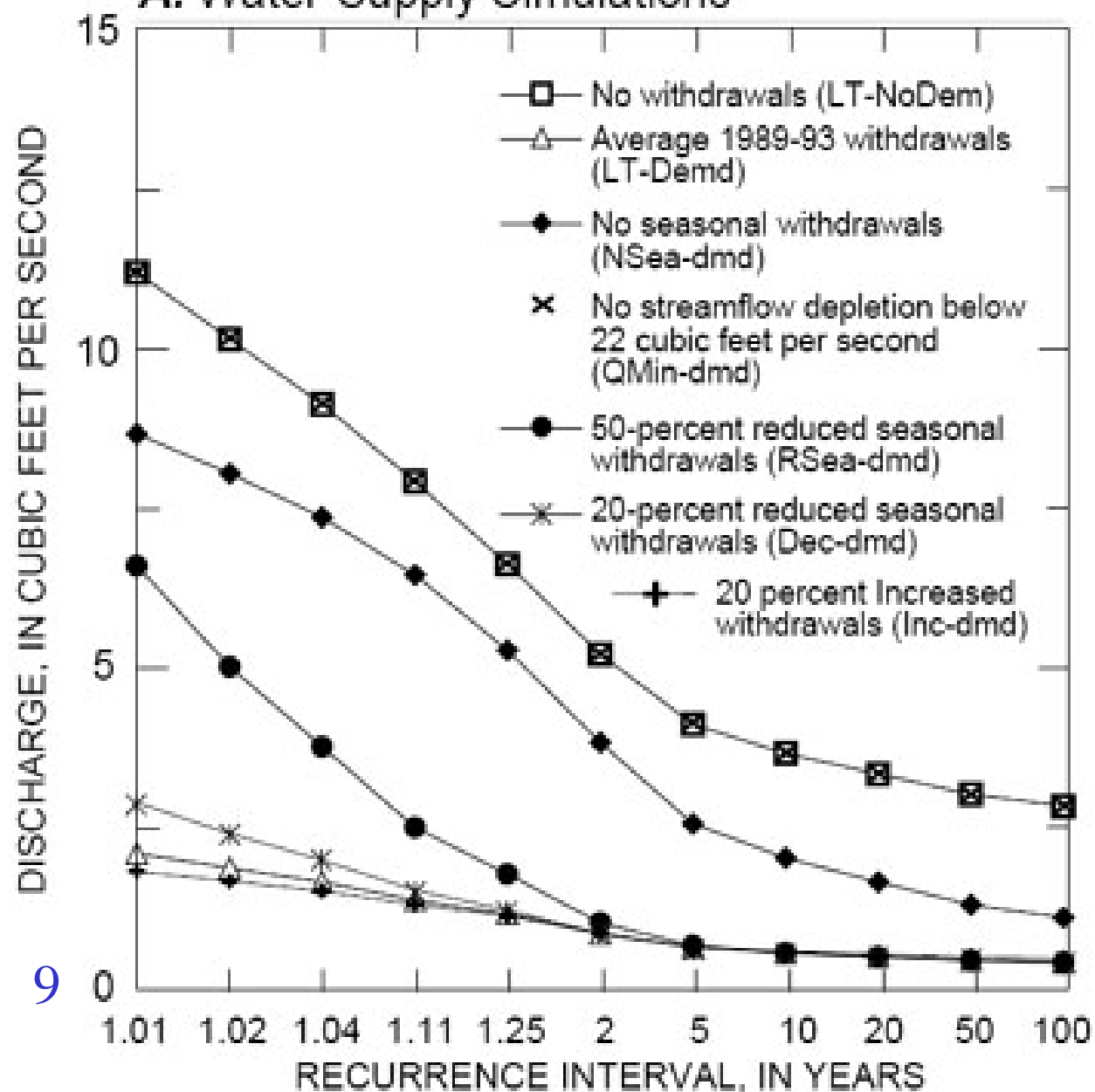
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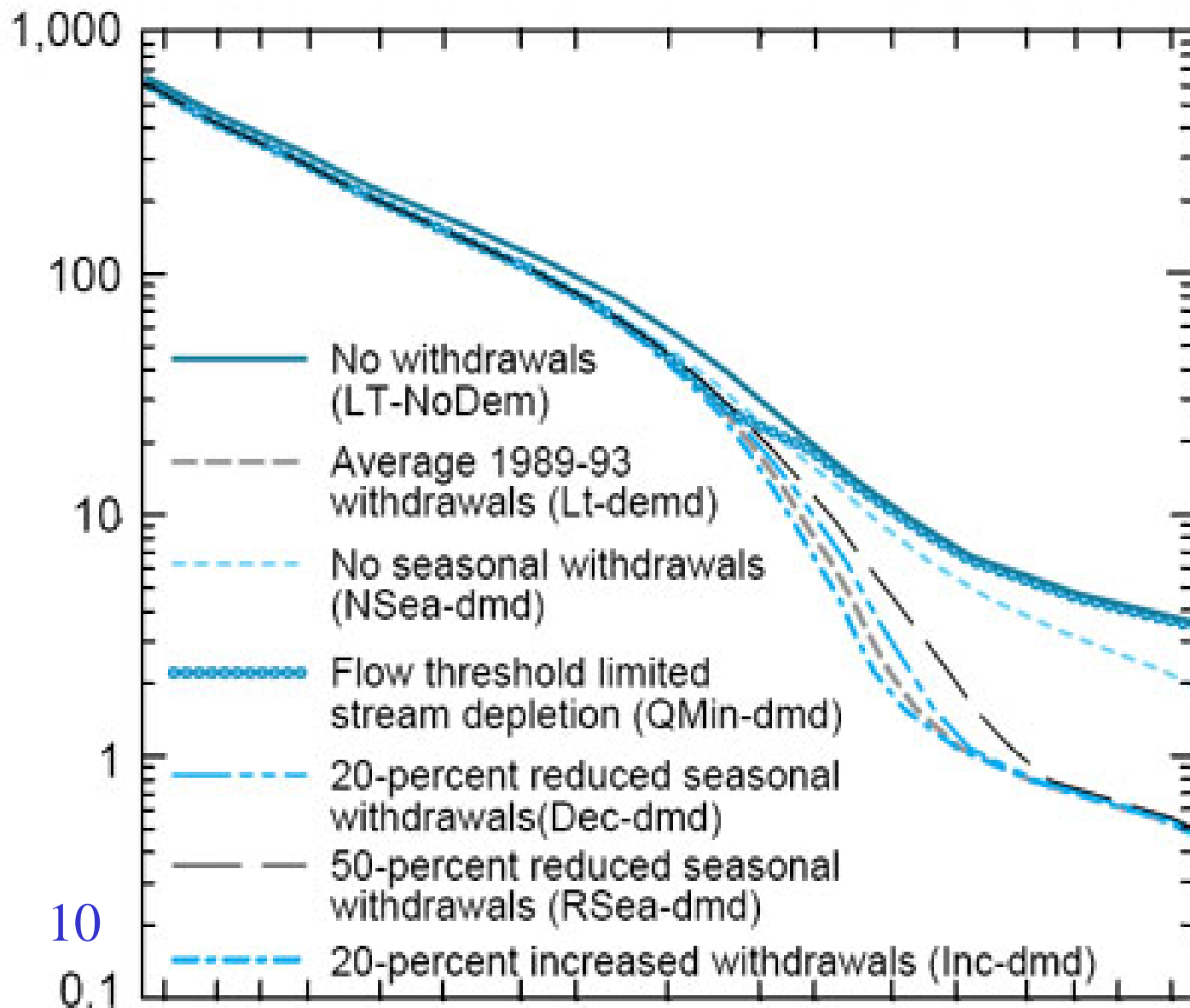
MODEL REACH 19



A. Water-Supply Simulations



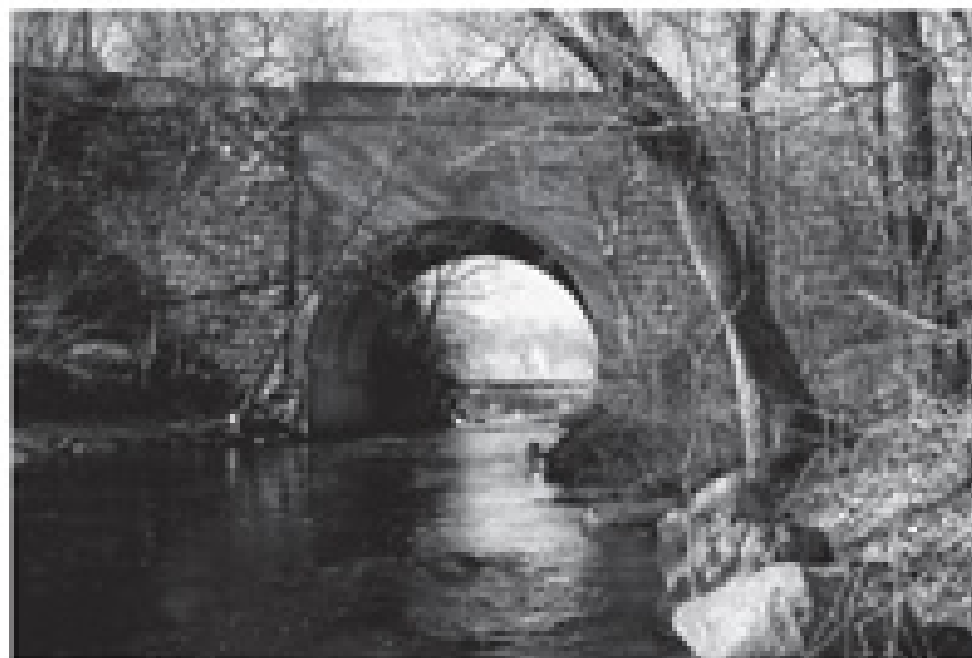
MODEL REACH 19



U.S. Department of the Interior
U.S. Geological Survey

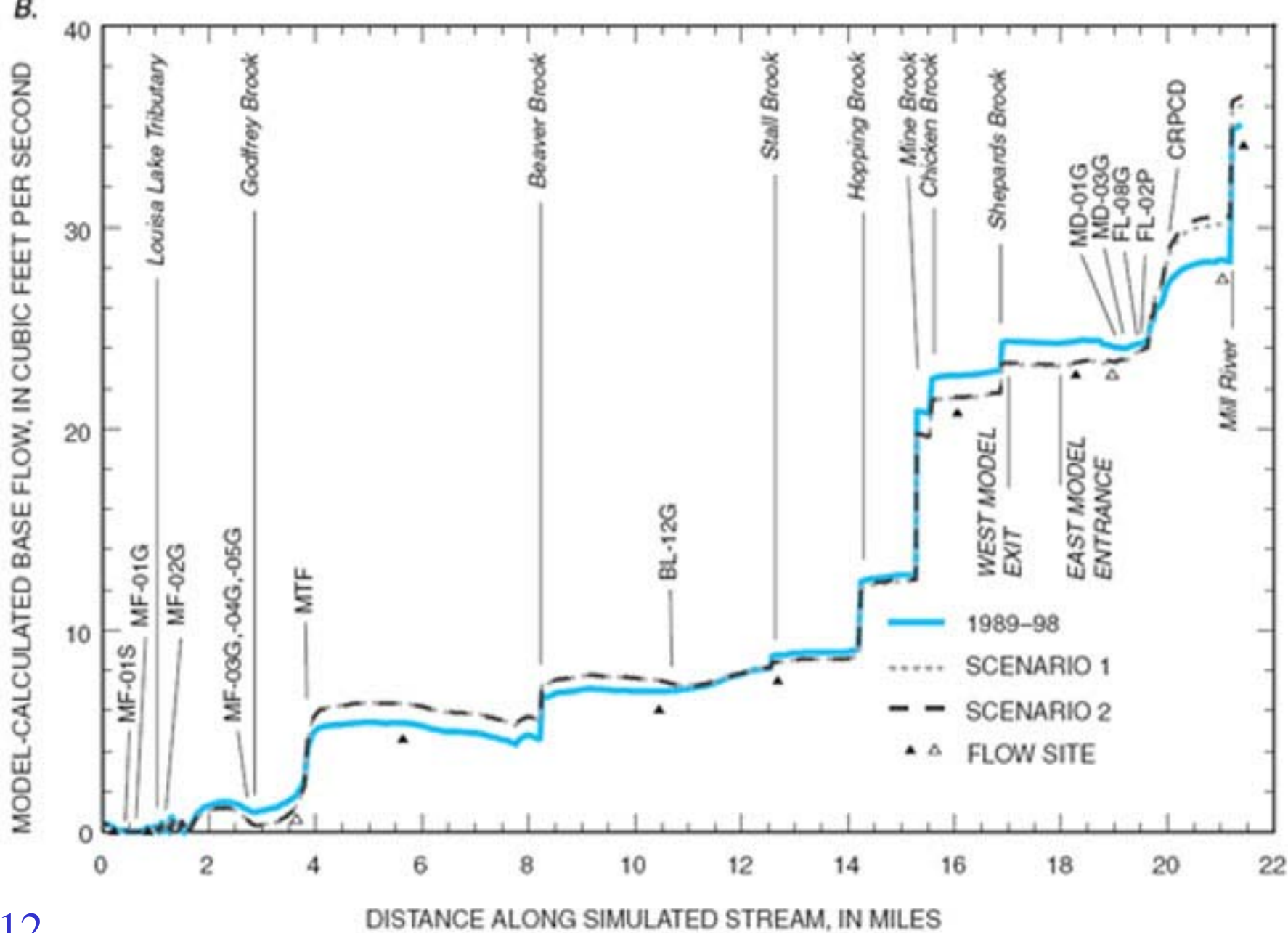
Simulation of Ground-Water Flow and Evaluation of Water-Management Alternatives in the Upper Charles River Basin, Eastern Massachusetts

Water Resources Investigation Report 90-1024



In cooperation with the
MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL MANAGEMENT and the
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Issue 3

Relevance Of Stressed Basin Report



The Commonwealth of Massachusetts
WATER RESOURCES COMMISSION

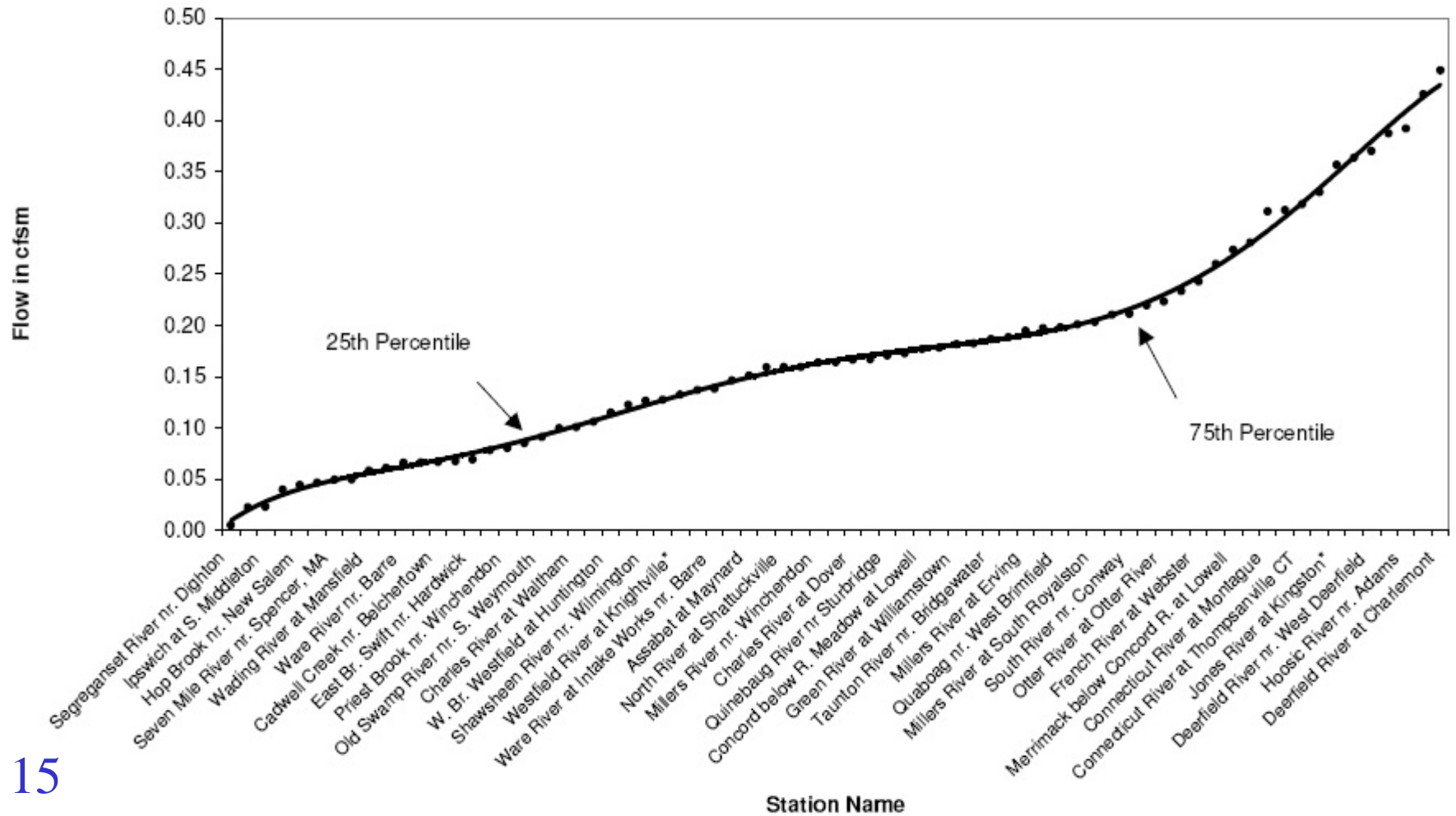
STRESSED BASINS IN MASSACHUSETTS

Approved December 13, 2001

Definition of Stressed Basin

- “A stressed basin is defined as a basin or sub-basin in which the quantity of streamflow has been significantly reduced, or the quality of the streamflow has been degraded, or the key habitat factors have been impaired.”

Figure 2. - Median of Annual 7-day Low Flow



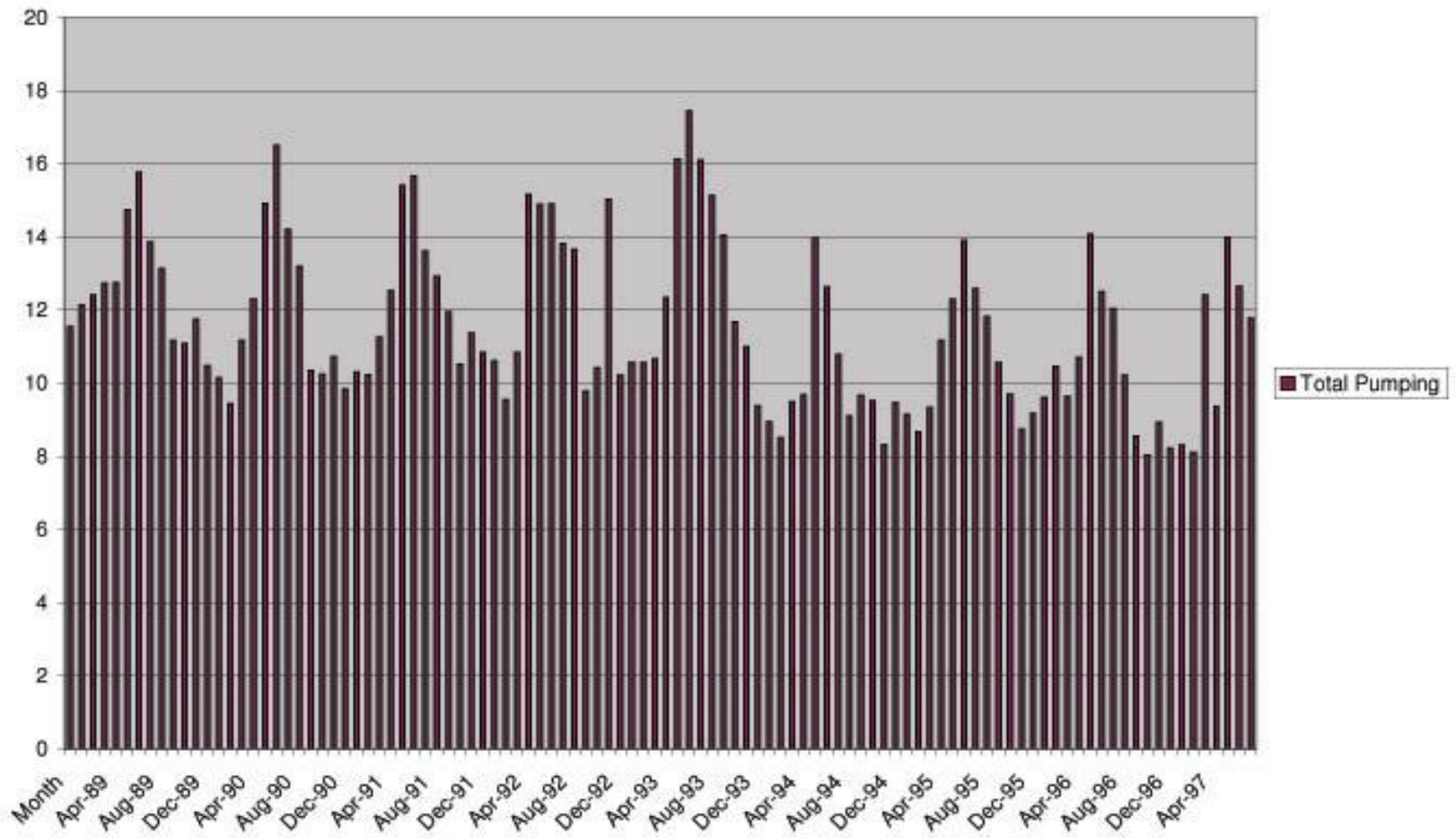
Misuse of the Stressed basin Report

- *“For purposes of identifying these stressed water resources, the Department adopted the stressed basin determinations contained in the Water Resources Commission’s Report, “Stressed Basins in Massachusetts.” The Report provides a framework for the Department to require more stringent conservation conditions in highly stressed basins. Stressed basins are defined in the report as ‘ a basin or sub-basin in which the quantity of streamflow has been significantly reduced, or the quality of the streamflow has been degraded, or the key habitat factors have been impaired.’”*

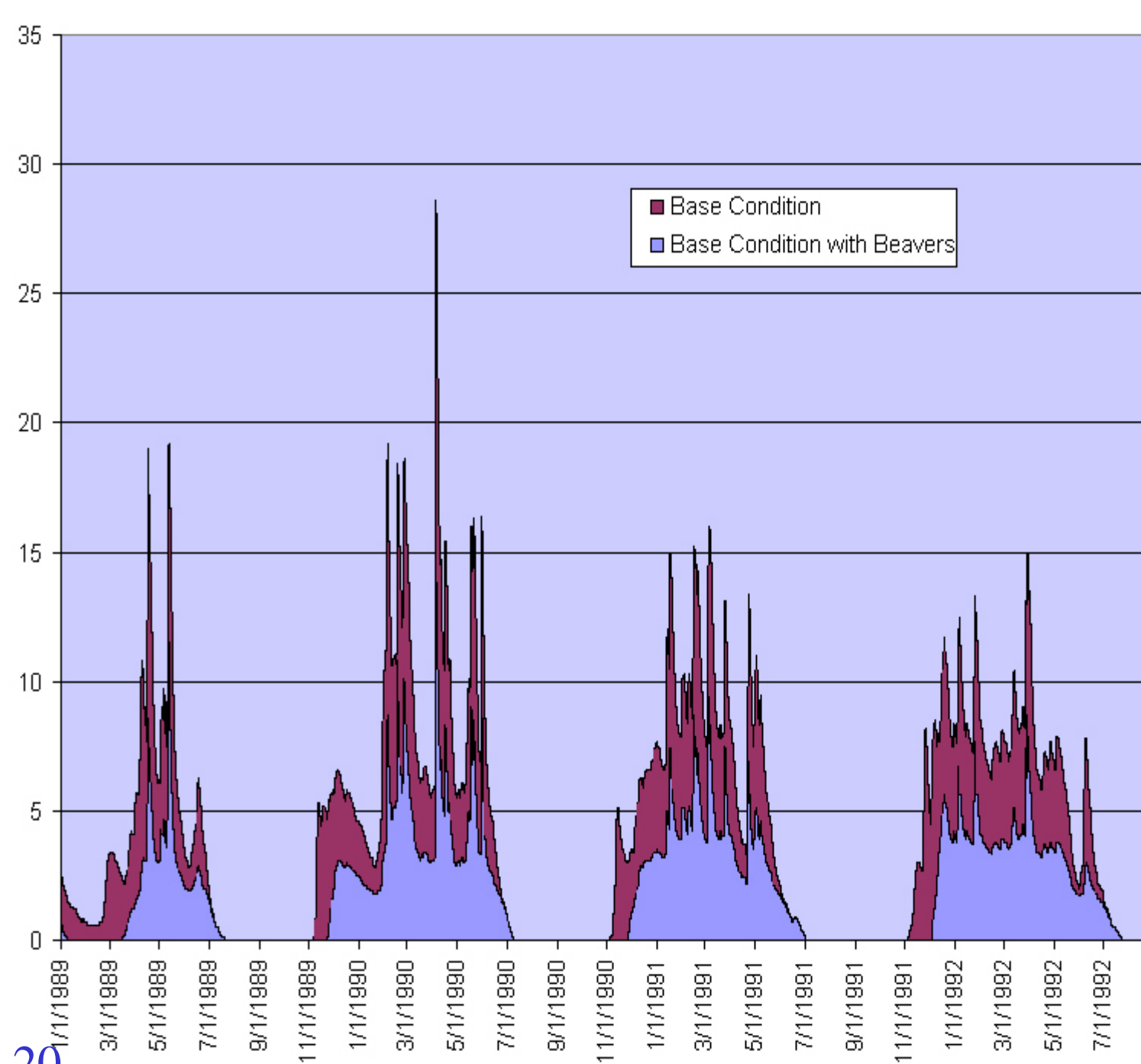
Technical Issues for Discussion

4) The Need For a More
Open and Comprehensive Approach
to the Problem of Low Flows and
Impacts to Aquatic Habitat

Total Water Use in Ipswich Basin







Management of summer low-flows will generally entail some combination of:

1. Increased recharge to aquifer (e.g., stormwater infiltration).
2. Bringing withdrawals more into phase with the recharge cycle (i.e., reduce summer demand management).
3. Reduce use of streamside wells in the summer; rely more upon aquifer (or reservoir) storage *away* from streams in summer.
4. Minimize export of water and wastewater.

Relative effects of withdrawals upon streamflow-- Role of hydrologic position, well location

